

EXECUTIVE SUMMARY

Wilson Ranch Fish Screen Project

Applicant
Deseret Farms of California

JUL 28 1997

Project Description & Primary Biological/Ecological Objectives:

Anadromous fish use the mainstem Sacramento River as the thorough-fare between their spawning grounds in the upper reaches of the river to the Pacific Ocean where they grow to full-adult size. Several years later, as full-size adults, they return to the river to spawn and die. Species such as steelhead and chinook salmon spawn in gravel beds near Redding and outmigrate down the Sacramento River as juveniles and smolts. During their period of outmigration, hundreds of agricultural farmers are diverting water from unscreened or poorly screened diversions. Unscreened diversions have been suspected of being a significant source of mortality for steelhead and chinook salmon.

Deseret Farms of California currently operates and maintain a fish screen at its Wilson Ranch on the Sacramento River near Chico. Since its installation in 1993, numerous problems have arisen that has reduced the effectiveness of the fish screen. River meander upstream of the bank threatens to outflank the fish screen while a dynamic river bed in the vicinity of the screen allows water to flow underneath the screen panels. These problems are beyond the control of Deseret Farms. Therefore, Deseret Farms proposes to install a new fish screen to address these problems and return to an operational yet effective screened diversion.

Approach/Tasks/Schedule:

The proposed project is expected to be constructed before the 1998 irrigation season and post-monitoring completed by the year 2001. The tasks for project completion are as follows:

Engineering & Design	—	Oct. 1997 to March 1998
Biological Consultation	—	Oct. 1997 to March 1998
Regulatory Permits & Consultation	—	Oct. 1997 to March 1998
Construction	—	April 1998
Post-project Monitoring	—	April 1998 to November 2001
Maintenance	—	April 1998 to April 2001

Justification:

The installation of a new fish screen at the Wilson Ranch would benefit priority species identified by CALFED. These priority fish species include steelhead and various chinook salmon runs, including winter-run, spring-run, and late-fall run. The proposed project addresses one of CALFED's stressor categories, benefits multiple species, is consistent with CALFED's long-term objectives, and has no-third party or redirected impacts. Therefore, funding is requested to complete the proposed project.

Budget Costs:

The estimated budget cost for completing the project is as follows:

Engineering & Design	—	\$ 16,000
Biological Consultation	—	\$ 17,000
Regulatory Permits & Consultation	—	\$ 5,000
Construction	—	\$ 110,000
Post-project Monitoring & Financial		
Reporting	—	\$ 65,000
Maintenance	—	\$ 15,000
Total Project Cost		\$ 228,000

Third Party Impacts:

There are no anticipated third party impacts associated with the project.

Applicant Qualifications:

This proposal is submitted by Murray, Burns and Kienlen, Consulting Civil Engineers of Sacramento, California on behalf of Deseret Farms of California. MBK has been retained to secure CALFED funding, obtain regulatory permits, engineering design, post-project monitoring and procurement of any subcontracts.

Murray, Burns and Kienlen (MBK) has provided consulting services to Deseret Farms, and its predecessor, Newhall Land & Farming Company, at the Wilson Ranch for over 35 years. MBK designed the existing fish screen and has been involved in over eight fish screen projects on the Sacramento River and in the Sacramento/San Joaquin Delta. Their experience in screening facilities and familiarity with the site make them uniquely qualified to manage this project.

Monitoring & Data Evaluation:

The project will be monitored for biological effectiveness and mechanical performance of the fish screen. A technical report would be prepared after each irrigation season to document mechanical performance of the fish screen and cleaning system. Biological monitoring would focus on both hydraulic and biological criteria.

Local Support/Coordination With Other Programs/Compatibility with CALFED:

The final design and specifications of the fish screen will incorporate advice from Department of Fish & Game (DFG) and National Marine Fisheries Service for expedient permit approval. Permits or approvals will be obtained from the Corps of Engineers, DFG Streambed Alteration Agreement, and the Central Valley Regional Water Quality Control Board. It is anticipated that funds would be sought from CVPIA Unscreened Diversion Program and DFG CVPIA matching funds. Cost share by Deseret Farms will be means of long-term operation and maintenance of the fish screen and in-kind services during post-project monitoring.

WILSON RANCH FISH SCREEN PROJECT

Prepared for:

**CALFED BAY-DELTA PROGRAM
1416 Ninth Street, Suite 1155
Sacramento, California 95814**

Applicant:

**Deseret Farms of California
c/o Don O'Dell
6169 Wilson Landing Road
Chico, California 95973
Telephone: (916) 343-5365**

**Applicant Type: Private
Tax I.D. 87-048-1574**

Technical and Financial Contact:

**Gilbert Cosio Jr
Murray, Burns and Kienlen
Consulting Civil Engineers
1616 29th Street Suite 300
Sacramento, California 95816**

Telephone: (916) 456-4400 Fax: (916) 456-0253

RFP Project Group Type: Construction

I. PROJECT DESCRIPTION:

Deseret Farms of California purposes to replace its seasonal fish screen on the Wilson Ranch in Butte County, California with a new fish screen in order to reduce entrainment of fish and provide operation flexibility. Wilson Ranch's existing fish screen is located at the end of the Wilson Slough oxbow along the left bend near river mile 203 of the Sacramento River (Sheet 1 & 2).

The principal objective of the project is to reduce entrainment of fish at the Wilson Ranch pumping plant by installing a seasonal and flexible fish screen. To accomplish this objective, a brushed cone fish screen would be installed near the existing flat plate screen which would be abandoned (Sheets 3 & 4). A pipe would run from the cone screen through a stone fill dam to reduce entrainment of fish in the oxbow during times of diversion. The stone fill dam would be constructed across the narrowest point of the oxbow to minimize impacts to existing vegetation and habitat and would remain in place throughout the year and reconstructed before each irrigation season, if necessary.

The cone screen cleaning system would be a battery-powered brush system recharged with a solar panel. Cleaning cycle timing would be a minimum of every 1 hour or as needed depending on flow and debris conditions in the river.

Operation flexibility would be achieved by using the stone fill dam and mounting the screens on piles. Utilizing a permanent structure such as the existing screen structure, is not feasible due to river meander which could outflank the structure, allowing the river to flow behind it. By using a stone fill dam and screens mounted on piles, river meander at the site would not be a problem due to the fact that the stone fill dam could be placed anywhere up and down the oxbow depending on channel conditions and configuration after each flood season. The discharge pipe would be extended accordingly. The screen would be mounted on four piles which would allow the screen to be removed during the flood season to prevent damage and for inspection and maintenance purposes. If necessary, the screens could be moved to a different location within the channel by installing new piles.

Fish screen criteria as described in "*Fish Screen Criteria for Anadromous Salmonids*," National Marine Fisheries Service, Southwest Region (January 1997) will be used to develop the screen specifications. The Wilson Ranch pumping plant has a maximum capacity of 29 cfs. It is proposed to use a 12 foot diameter cone screen by Intake Screens, Inc. to satisfy the approach velocity criteria of 0.33 fps for chinook salmon. Screen material would consist of perforated stainless steel with 5/32 inch round openings on 1/4 inch staggered centers. This specification meets or exceeds the screen material criteria for fingerling salmonids. Similar cone screens with solar power brush systems have been installed on five diversions in

the Suisun Marsh and have proved effective. The final screen design and specifications will be developed in consultation with staff from Department of Fish & Game (DFG) and National Marine Fisheries Service (NMFS).

BACKGROUND:

The Wilson Ranch pumping plant is approximately 4000 feet upstream of the existing fish screen located at the mouth of the oxbow. The pumps draw water from the Sacramento River via the downstream end of the oxbow. At one time, water flowed from the upstream end of the oxbow until river meander cut off the entrance many years ago. Since then, the pumping plant has had many problems drawing water due to siltation at the end of the oxbow.

The existing fish screen was first installed in 1994 as a condition of an "after-the-fact" permit issued by the U.S. Army Corps of Engineers. The fish screen consists of screen assemblies lowered into place between pilings placed between the banks of the oxbow. Since the installation of the fish screen, the following problems have occurred with the operation of the screen:

1. The river bed at the existing screen has changed each year allowing water to flow underneath the screen panels. Placing sandbags at the bottom of the screens has not proved effective, requiring a diver to inspect the placement of sandbags.
2. During the past two flood seasons, severe erosion has occurred on the upstream bank of the fish screen. The California Department of Fish & Game owns the property and has not shown interest in stopping or repairing the erosion. In time, the erosion will cause the river to outflank the fish screen allowing water to flow behind the fish screen and washout the downstream bank.

BIOLOGICAL JUSTIFICATION:

Entrainment of fish into agricultural diversions along the mainstem of the Sacramento River is suspected of being a significant source of mortality for chinook salmon, since many of the diversions are unscreened or poorly screened. The large number of diversions represents a potential threat to steelhead and chinook salmon populations during the rearing and smolt outmigration periods, particularly since the irrigation season overlaps with periods when juvenile salmonids are liable to be present and most vulnerable to entrainment. In addition, the siting of diversion intakes may sometimes increase entrainment risk if the intake is located in near-shore, shallow areas that many fish species tend to use as rearing habitat. Installation of a more efficient fish screen at the Wilson Ranch diversion will have tangible

benefits to the ecosystem by reducing mortality of priority species that include steelhead and various chinook salmon runs, including winter-run, spring-run, and late-fall run.

EXPECTED BENEFITS:

The proposed project, as designed will address the existing fish screen ineffectiveness and river meander at the location. It would also address one major ecosystem stressor category ("Alteration of Flows and Other Effects of Water Management") and will specifically address the stressor subcategory of entrainment. Fish screens are an effective and proven mechanism for reducing entrainment losses, and replacement of the screen at the Wilson Ranch will lead to greater protection of priority fish species identified in the RFP. Fish species that will benefit from the project include steelhead and all the runs of chinook salmon. The proposed project is consistent with CALFED's long-term restoration objective, benefits multiple species, and has no third-party impacts or redirected impacts.

PROPOSED SCOPE OF WORK:

To complete this project, the following tasks have been identified:

1. **Engineering Design** — final design of fish screen & civil works, plans and specifications for construction, contract administration and project inspection/monitoring.
2. **Biological Consultation** — biological evaluation of fish screen design, consultation with resource agencies, site assessment, refinement of technical and biological monitoring.
3. **Regulatory Permits and Consultation** — prepare regulatory permit applications, oversee permit process.
4. **Construction** — construct fish screen and civil works.
5. **Post-project Technical and Biological Monitoring (3 years)** — evaluate and report on performance and effectiveness of fish screen.
6. **Maintenance (3 years)** — install/remove screens, repair screen as needed, replace rock dam as needed.

It is proposed to provide financial and progress reports quarterly prior to construction. After construction, technical and biological monitoring reports will be provided once a year after irrigation season, for three years. Financial reports would include an itemization of all

incurred costs per task as described above. Reports would be submitted to CALFED and all interested parties.

MONITORING AND DATA EVALUATION:

A three year technical and biological monitoring plan is proposed to evaluate the performance and effectiveness of the fish screen.

Technical monitoring of the fish screen would focus on the mechanical performance of the screen. Daily or weekly inspection logs would be prepared during the operation of the screen. Inspection during operation would document river conditions, debris load, pumping rate, and cleaning cycle timing. After each irrigation season, a technical report will be prepared to report the performance of the screen during the irrigation season.

The biological monitoring program for the fish screen at Wilson Ranch will be focused on evaluating both hydraulic and biological criteria. These criteria include the following: 1) does the hydraulic performance of the screen match design/regulatory requirements ? and 2) is the screen successfully excluding/diverting the species of concern from the water diversions?

Hydraulic performance will be assessed by evaluating approach velocities and sweeping velocities under a range of flow conditions. Acceptable approach velocities at the screen are expected to be ≤ 0.33 feet per second. Maintaining a suitably low approach velocity is important to avoid impingement of fish on the screen. Approach velocity will be measured by an electromagnetic (Marsh-McBirney) meter or acoustic meter along a grid pattern, perpendicular to the screen face and approximately three inches in front of the screen surface.

Sweeping velocities across the face of the screen are important to move fish away from the diversion as quickly as possible, thereby providing little opportunity for entrainment or impingement. Sweeping velocities should be twice the approach velocity, and will be measured with the same current meter used for approach velocities. Measurements will be conducted parallel and adjacent to the screen face. A range of measurement locations will be used in order to depict velocity isopleths in the vicinity of the screen.

Biological sampling will be conducted behind the fish screen during the spring and summer diversion period for three years, and any captured species identified, counted, and measured. Sampling during the first spring and summer of screen operation will occur on a monthly basis. Biological sampling will utilize a fyke net and live box that can be attached

directly to the discharge end of the diversion. The net will be continuously operated during water diversion over 2-3 days for each sampling period.

IMPLEMENTABILITY

Regulatory permits for the proposed project have not been obtained yet. The project will be performed under U.S. Army Corps individual permit and California Department of Fish & Game Streambed Alteration Agreement. A maintenance permit from the Corps to dredge the exit of the oxbow is currently being pursued to remedy the siltation problem. It is anticipated that, the installation fish screen will have no significant impact upon the vegetative and aquatic resources and water quality therefore no mitigation is planned or required. The proposed fish screen design adopts technically sound and proven components as demonstrated on diversions in the Suisun Marsh. If construction funding is approved, construction could begin as early as April 1998 and no later than April 1999. The fact that the site has undergone significant review with the existing fish screen has made all responsible agencies quite familiar with the site which will accelerate the process.

II. COST AND SCHEDULE:

Table 1 shows the estimated costs of the tasks described in the Scope of Work section. Funds are requested from CALFED for 100% of the total cost. Deseret Farms of California plans to cost share in the project by providing long-term operation and maintenance of the fish screen. Deseret will also provide in-kind services during the monitoring process. It is anticipated that funds would be sought from CVPIA Unscreened Diversion Program and DFG CVPIA matching funds.

Table 1

Cost Breakdown							
Project Phase and Task	Direct Labor Hours	Direct Salary & Benefits	Overhead Labor	Service Contracts	Material & Acquisition Contracts	Miscellaneous & other District Costs	Total Cost
Engineering Design	—	—	—	\$ 16,000	—	—	\$ 16,000
Biological Consultation	—	—	—	17,000	—	—	17,000
Regulatory Permits & Consultation	—	—	—	5,000	—	—	5,000
Construction	—	—	—	110,000	—	—	110,000
Technical Monitoring & Reporting (3 years)	—	—	—	10,000	—	—	10,000
Biological Monitoring & Reporting (3 years)	—	—	—	48,000	—	—	48,000
Financial Reporting (3 years)	—	—	—	7,000	—	—	7,000
Maintenance	—	—	—	15,000	—	—	15,000
TOTAL				\$228,000			\$228,000

The project is expected to be constructed before the 1998 irrigation season by adopting the following schedule:

Engineering & Design	—	Oct. 1997 to March 1998
Biological Consultation	—	Oct. 1997 to March 1998
Regulatory Permits & Consultation	—	Oct. 1997 to March 1998
Construction	—	April 1998
Post-project Monitoring	—	April 1998 to November 2001
Maintenance	—	April 1998 to April 2001

III. APPLICANT QUALIFICATIONS

Deseret Farms has maintained the existing facility for four years. The extensive effort required to maintain the system in light of the aforementioned obstacles shows its dedication to protect the fisheries resource. In fact, Deseret's maintenance experience at this site will affect the new system's design. Its efforts to date also exemplify the qualification of Deseret to operate and maintain a fish screen facility.

Consistent with Government Code §4525, Murray, Burns and Kienlen, Consulting Civil Engineers, was selected by Deseret Farms of California to provide engineering and financial services in connection to obtain CALFED funding and construction of project. The selection was made on the basis of qualifications and demonstrated competence for the requested services, including documentation of fair and reasonable prices. As described below, they are uniquely qualified to lead the design, construction and monitoring of this project.

MBK is a consulting civil engineering firm whose main emphasis is water resources. Its three main areas of specialization include water supply planning, flood control and water rights. MBK represents many water diverters located in the Sacramento/San Joaquin Delta watershed. This association has resulted in MBK personnel's involvement in many existing and planned fish screening facilities. The services provided include feasibility design and environmental/regulatory. The list of projects includes Pelger Mutual Water Company, Deseret Farms Wilson Ranch, Maxwell Irrigation District, Lower Joice Island, Thousand Acre Ranch, Browns Valley Irrigation District, Grizzly Island and King Island.

In addition, MBK has provided consulting services to Deseret Farms, and its predecessor, Newhall Land & Farming Company, at the Wilson Ranch for over 35 years. Services provided over the years include water supply planning and flood control. Their experience includes work in regard to the pumping plant and distribution system, as well as designing and permitting the existing fish screen.

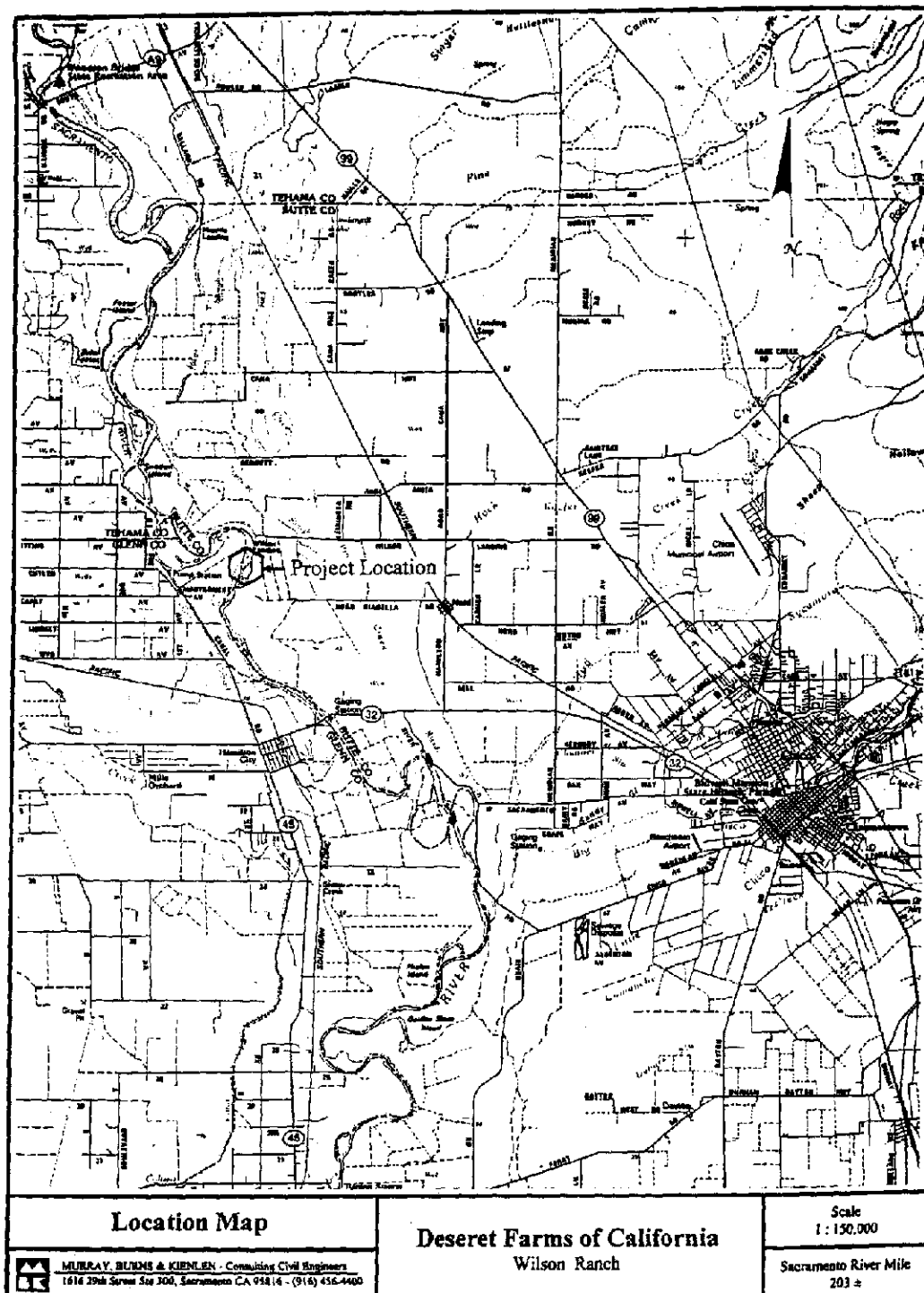
Consistent with Government Code §4525, EA Engineering, Science, and Technology, Inc. was selected by Murray, Burns and Kienlen to provide environmental services in connection with project development and permit processing. The selection was made on the basis of qualifications and demonstrated competence for the requested services, including documentation of fair and reasonable prices.

Pursuant to California Government Code §1090, EA Engineering, Science, and Technology, Inc. is disclosing a remote interest in proposals submitted for funding under CALFED's 1997 Category III program. EA staff, as third tier subcontractors to the Bureau of Reclamation, have provided technical and administrative support to CALFED agency staff

in the Restoration Coordination Program. In this capacity, EA staff have assisted with documentation of public meetings of the Ecosystem Roundtable, and compiled technical team meeting information for distribution to Roundtable members and the public. EA's legal counsel has determined that EA's participation as a subconsultant in contracts that may be awarded under the Category III program does not constitute a violation of California Government Code §1090.

EA is a multidisciplinary environmental consulting firm with a staff of Northern California scientists who specialize in environmental analyses related to water resources. EA's staff have been conducting aquatic studies in the Delta and its tributary watersheds for over 20 years, and have completed entrainment studies on dozens of facilities during that time.

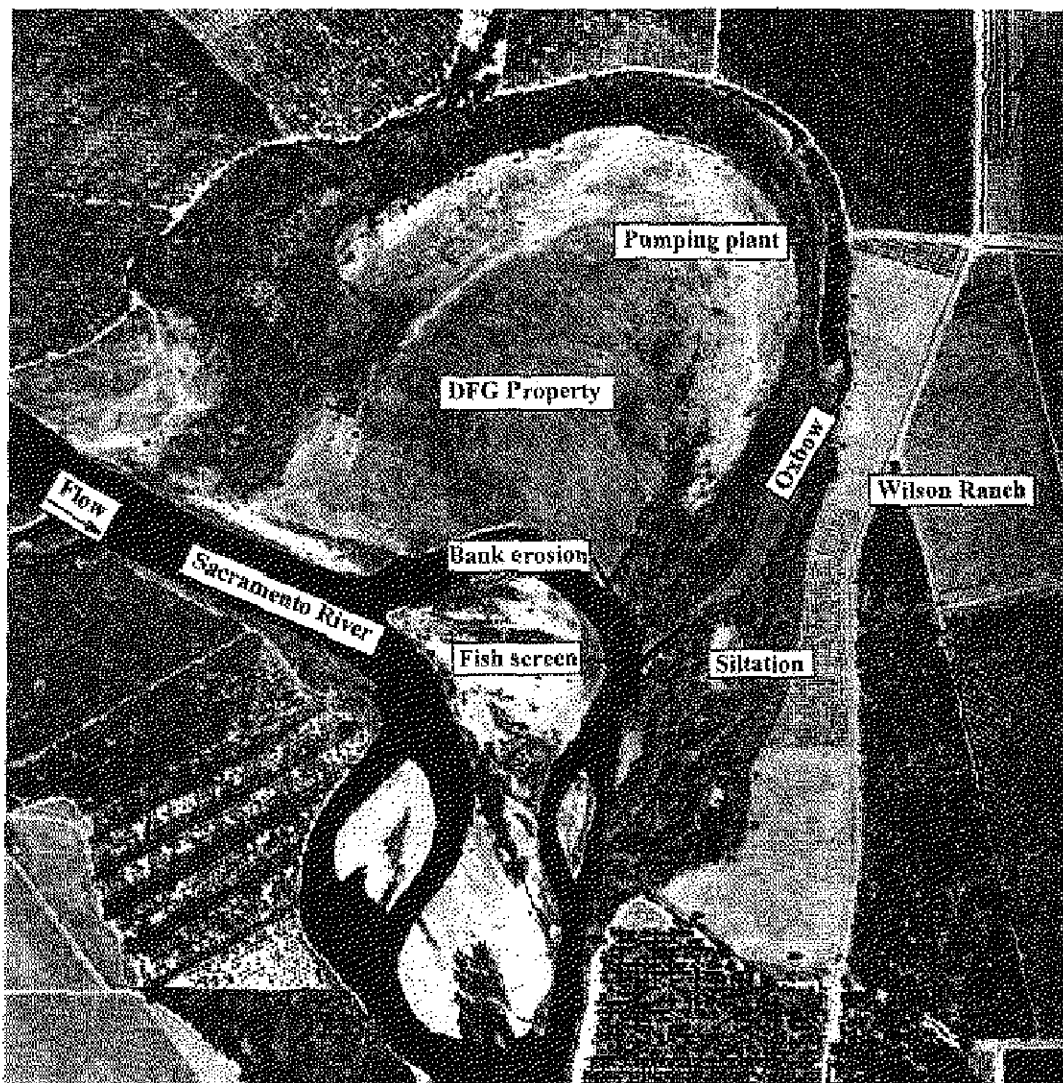
Scott Wilcox of EA Engineering, Science, and Technology is a senior fisheries biologist whose role will involve technical oversight and management of tasks related to biological monitoring and environmental compliance. His areas of technical expertise include aquatic and terrestrial resource impact assessment, fish screen evaluation, and fisheries analyses in riverine and estuarine systems. His 17 years of experience includes biological investigations for approximately 30 projects within or tributary to the Central Valley and the Delta. Many of these projects involved planning of aquatic habitat restoration actions and characterization of fish populations and habitat conditions. Relevant project experience includes biological consultation, design, and monitoring plan development for fish screens on hydro projects; fish population sampling in riverine and estuarine systems; CEQA compliance for habitat restoration and mitigation projects; and TES species surveys. Professional references for similar projects include John Kessler (916-644-1960) of El Dorado Irrigation District and Steve Onken (916-534-1221) of Oroville-Wyandotte Irrigation District.



SHEET 1 OF 4

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Site Map

Deseret Farms of California

Wilson Ranch Fish Screen

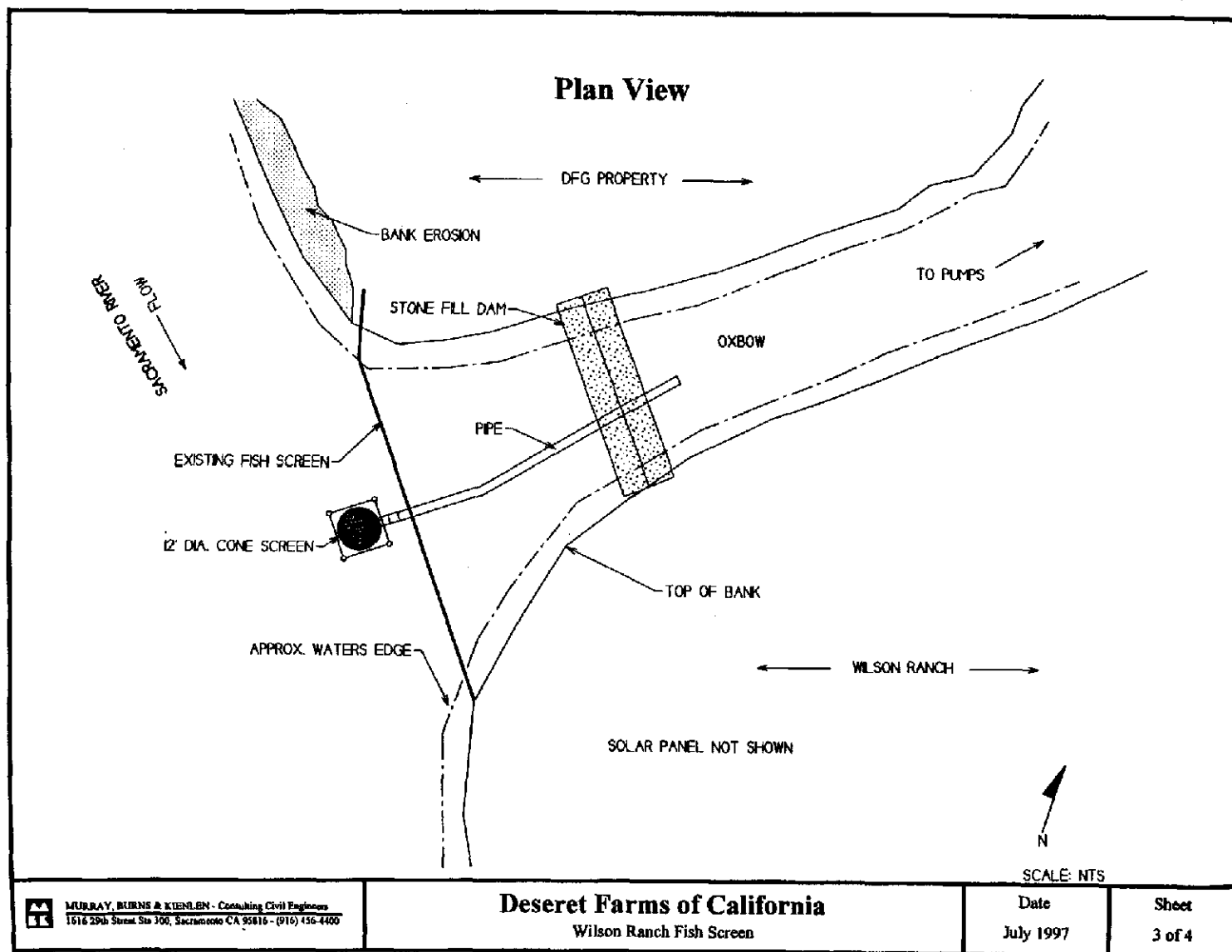
Date
July 1997

Sheet
Sheet 2 of 4



MURRAY, BURNS & KIENLEN - Consulting Civil Engineers
1616 29th Street Sacramento, CA 95816 - (916) 456-3300

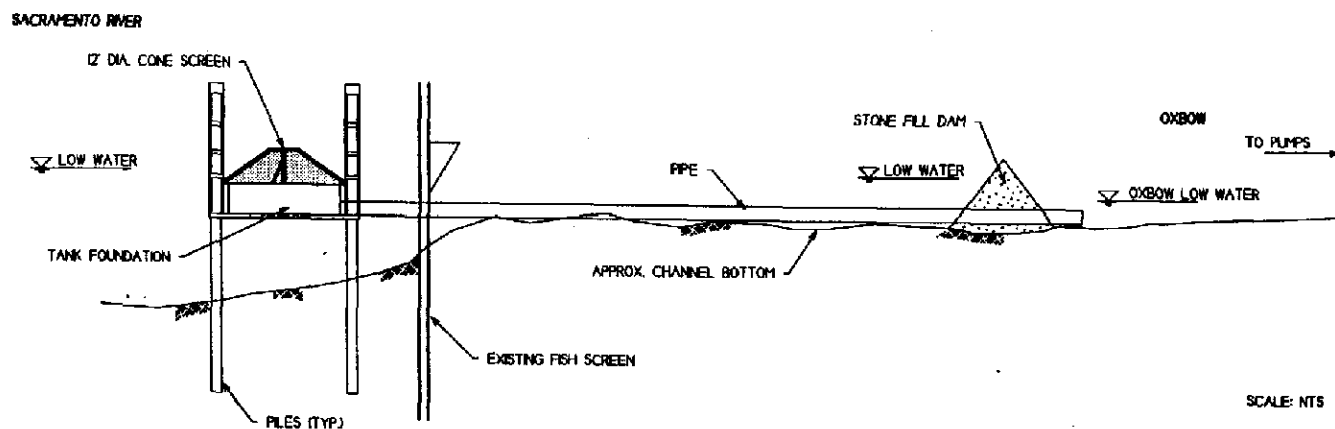
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Cross Section



MURRAY, BURNS & KIENLEN - Consulting Civil Engineers
1616 29th Street Ste 300, Sacramento CA 95816 - (916) 436-4400

Deseret Farms of California
Wilson Ranch Fish Screen

Date
July 1997

Sheet
4 of 4

1-006772

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME

Deseret Farms of California

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California.

OFFICIAL'S NAME

Robert L Hatch

DATE EXECUTED

7/23/97

EXECUTED IN THE COUNTY OF

Butte

PROSPECTIVE CONTRACTOR'S SIGNATURE

[Signature]

PROSPECTIVE CONTRACTOR'S TITLE

Manager

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

Deseret Farms of California

NONCOLLUSION AFFIDAVIT TO BE EXECUTED BY
 BIDDER AND SUBMITTED WITH BID FOR PUBLIC WORKS

STATE OF CALIFORNIA)

COUNTY OF Butte)ss

Robert L Hatch for Desert Farms of being first duly sworn, deposes and
 (name) California

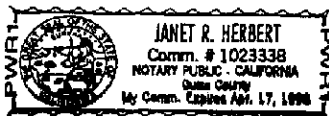
says that he or she is manager of
 (position title)

Desert Farms of California
 (the bidder)

the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

DATED: 7/23/97By [Signature]

(person signing for bidder)



(Notarial Seal)

Subscribed and sworn to before me on

7/23/97
[Signature]
 (Notary Public)

MURRAY, BURNS & KIENLEN

A Corporation
1616 29th Street, Suite 300
Sacramento, California 95816
Tel. (916) 456-4400
FAX (916) 456-0253

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TRANSMITTAL MEMORANDUM

July 28, 1997

TO: CALFED Bay-Delta Program
1416 Ninth Street, Suite 1155
Sacramento, California 95814

JUL 28 1997

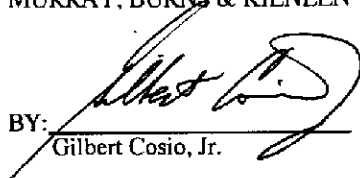
FROM: Gilbert Cosio
Murray, Burns and Kienlen

**SUBJECT: Transmittal of 1997 Category III Proposal --
Deseret Farms of California**

In accordance with specifications described in the "Request for Proposals, 1997 Category III, Ecosystem Restoration Projects and Programs", transmitted on behalf of Deseret Farms of California, are the enclosed ten (10) copies of their proposal regarding the "Wilson Ranch Fish Screen Project".

If you have any questions, or require additional information, please call me at (916)456-4400.

Sincerely,
MURRAY, BURNS & KIENLEN

BY: 
Gilbert Cosio, Jr.

cc:
Deseret Farms of California
c/o Mr. Don O'Dell

7/28/97
11:23 AM